

# CLAIMS

[1] Electrodes for an electrochemical cell including a proton-conductive electrolyte, the electrodes being an anode and a cathode, the anode and/or the cathode comprising a solid having hydrogen permeability.

[2] The electrodes according to Claim 1, wherein the proton-conductive electrolyte has a perovskite structure represented by the general formula  $AB_xO_{3-d}$  (wherein  $0.8 \leq x \leq 1.2$ ; and d is a deviation from the nominal value of oxygen, namely 3); and the B-site elements include zirconium (Zr).

[3] The electrodes according to Claim 2, wherein the content of zirconium (Zr) is 20 mole percent or more.

[4] The electrodes according to any of Claims 1 to 3, wherein the solid having hydrogen permeability is a mixed proton-electron conductor.

[5] The electrodes according to Claim 4, wherein the mixed proton-electron conductor is a mixed proton-electron conductive ceramic material having the perovskite structure.

[6] The electrodes according to any of Claims 1 to 3, wherein the solid having hydrogen permeability is a hydrogen storage alloy.

[7] The electrodes according to Claim 6, wherein the hydrogen storage alloy comprises palladium (Pd).

[8] The electrodes according to Claim 7, wherein the hydrogen storage alloy comprises 10% or more of palladium

(Pd) .

[9] The electrodes according to any of Claims 1 to 3, wherein the solid having hydrogen permeability is a mixture of a mixed proton-electron conductor and a hydrogen storage alloy.

[10] The electrodes according to Claim 9, wherein the mixed proton-electron conductor is a mixed proton-electron conductive ceramic material having the perovskite structure; and the hydrogen storage alloy comprises palladium (Pd) .

[11] An electrochemical cell comprising the proton-conductive electrolyte and the electrodes according to any of Claims 1 to 10.